



# Climate vulnerability and capacity of ethnic minorities in the northern mountainous region of Vietnam

CARE INTERNATIONAL IN VIETNAM | 2013

## REPORT



## ACKNOWLEDGEMENT

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## Executive Summary

Vietnam's ethnic minorities in the northern mountainous region are substantially poorer than Vietnam's ethnic majority Kinh. Although there are important socio-economic differences among the 53 ethnic minority groups in Vietnam, including distinct cultural and linguistic groups, a Vietnamese person belonging to an ethnic minority group is more likely to be born poor than their Kinh countrymen and women. While national poverty rates in Vietnam have decreased dramatically in recent decades, the poverty rate among ethnic minorities remains high and the gap between them has increased.<sup>1</sup> Whilst consumption levels doubled for all ethnic groups from 1998 to 2006, the gap in average consumption levels between ethnic minority groups and the ethnic majority actually widened from USD107 to USD194 in the same period.<sup>2</sup>

Ethnic minorities in Vietnam lack the same opportunities to improve their situation. They are typically remote and their livelihoods are heavily reliant on natural resources, which depend on weather and climate conditions for productivity, and often have lower productivity land. They typically have less access to education, formal financial services and markets, which limits their opportunities for development; persistent stereotypes also hold back ethnic minority progress.<sup>3</sup> Importantly, within ethnic minority groups, the burdens of poverty tend to fall more heavily on women.<sup>4</sup>

People in many parts of the world are already feeling the impacts of climate change – including rising temperatures, changing rainfall patterns and changes in the frequency and intensity of extreme weather. The implications of climate change are not uniform within countries, communities or even within households. It is important to understand the different vulnerabilities and capacities of all groups to best target adaptation initiatives in response to the immediate and long term challenges posed by climate change.

Vietnam is likely to be one of the most significantly impacted nations in the world from climate change due to its very long coastline, high dependence on agriculture, and relatively low levels of development in rural areas. Whilst the northern mountains are not directly impacted by sea level rise, a range of other significant climate impacts including changing temperatures, rainfall patterns and storms are relevant. Key patterns reported are more frequent temperature extremes (hot and cold), below average rainfall during the dry season, increased

incidences of flooding, and an overall increase in rainfall but with decreasing predictability.

National and international attention has focussed on the impacts on coastal and delta areas in Vietnam from sea level rise and typhoons. In contrast, there has been little attention on the mountainous areas in the north of the country, and in particular on the specific challenges faced by ethnic minority groups living in this region. Ethnic minorities, and the organisations that work with them, have not received the attention and support of their counterparts in southern parts of the country. This has the potential to further limit the ability of remote ethnic minorities to access support and resources to adapt to climate change.

CARE takes a holistic approach to understanding vulnerability to climate change and recognises that there are multiple factors that shape people's vulnerability and capacity to adapt. Exposure to climate hazards and changing climatic conditions such as temperature and rainfall are only part of the picture – socio economic factors are also critical.

This report explores the vulnerability to climate change of ethnic minority groups in the northern region of Vietnam and their capacity to adapt. It is based on a study conducted as part of CARE Vietnam's Civil Action for Socio-economic Inclusion in Sustainable Development (CASI III) Project. This report is a synthesis of the analysis conducted using the Climate Vulnerability and Capacity Analysis (CVCA) Handbook.<sup>5</sup> It also draws on analyses conducted in the project area for the design of the CASI Project. The CVCA Handbook is organised around CARE's framework for community-based adaptation (CBA). The CBA framework presents a range of "enabling factors" which must be in place at household/individual, community/local and national levels in order for effective community-based adaptation to take place. The enabling factors fall under four inter-related components: climate-resilient livelihoods, disaster risk reduction, local capacity development and advocacy. This report draws on several sources including baseline data; draft district CVCA reports and original field visit notes. Secondary research, policy analysis and key informant interviews were important sources. Whilst there was a gap between the field work in 2011 and report production the results are still relevant and useful for adaptation programming.

The range of factors contributing to the vulnerability of ethnic minority communities to climate change are typically lost in national analyses. These analyses tend to focus on exposure to climate hazards and include only a limited consideration of some of the factors that contribute to adaptive capacity. And further, there is little if any consideration of the sensitivity of different people and groups to climate and weather. These analyses do not fully take into account gender dimensions, relative wealth, access to information and decision making or the contribution of social exclusion to ethnic minority vulnerability to climate change.

The analysis undertaken into climate change and ethnic minorities for this report drew on the project's understanding of existing causes of poverty. An analysis of the underlying causes of poverty prepared for the CASI project identifies restricted access to natural and agricultural resources as well as vulnerability to natural disasters as key factors. Climate change will increasingly drive the existing cycle of remote ethnic minority food insecurity through further undermining the productivity and quality of the natural resource base, changing the patterns of natural disasters and decreasing the economic, social and health resilience of households. Ethnic minority communities are typically remote and their livelihoods are heavily reliant on natural resources, and existing degradation of natural resources is contributing to vulnerability. Climate and livelihoods are intricately linked for ethnic minorities in the northern mountains and there are clear gender dimensions to existing livelihood practices and hence to the consequences of climate change.

Local and national policies and institutions play a critical role in shaping people's capacity to adapt to climate change. Ethnic minorities in northern Vietnam are typically distant from government agencies. The government of Vietnam has initiated several programmes intended to improve the situation for ethnic minorities but it was reported that in many cases these efforts were not as targeted or appropriate as they needed to be given the diversity of locations and ethnicities.

An analysis of existing coping methods revealed which existing practices are effective and sustainable, and which are not. This was important to be able to know what can be built upon for adaptation to climate change. Part of the analysis for this report included consideration of existing coping strategies being used as well as recovery strategies in response to climate and weather conditions and events, and whether they are sustainable into the future.

The already limited access of ethnic minority groups to appropriate government services, existing social exclusion and ongoing limited access to markets will continue to constrain the opportunities that could be available to them to adapt to climate change. As well as the climate – livelihood linkages, disaster risk and the policy and institutional context, there are other underlying causes of climate vulnerability.

These are things that may not be directly related to climate change but which contribute to the vulnerability and indeed the potential to adapt to climate change. To fully understand the climate vulnerability and capacity of ethnic minorities in the northern mountains of Vietnam it is vital to understand these causes. The analysis illustrates the complexity of vulnerability of ethnic minority groups in the CASI III project area and that it is vital to explore the specific circumstances facing a population in order to design and implement effective and appropriate interventions.

**THE FOLLOWING RECOMMENDATIONS FOR ADDRESSING THE PARTICULAR VULNERABILITIES AND CAPACITIES OF ETHNIC MINORITIES ARE PRIMARILY INTENDED TO INFORM FUTURE PLANNING BY THE CASI III PROJECT. HOWEVER, THEY MAY INCLUDE SOME INSIGHTS THAT ARE USEFUL MORE BROADLY IN VIETNAM AND FOR OTHERS WORKING WITH ETHNIC MINORITY GROUPS ON CLIMATE CHANGE ADAPTATION.**

**The analysis found that for the CASI project to effectively and appropriately address the vulnerabilities and capacities of ethnic minorities in Vietnam:**

- It is important to ensure that gender is fully and effectively integrated across the project components
- Further training for project staff and communities on the specific situation of women in ethnic minority communities be carried out
- Ensure that an appropriate scale is used to plan interventions, taking into account any other contributing factors including environmental degradation
- Actions to share information about the knowledge developed in the project across multiple levels should be implemented as well as action to build capacity in adaptation planning at multiple levels
- Practical research into the application of the CBA model itself, as well as specific activities within the project (such as indigenous crops, crop systems, non farm income generation) should be undertaken
- It should advocate to relevant agencies on key infrastructure needs
- Actions to facilitate the voice of ethnic minority groups in planning and policy-making at all levels should be taken

- Climate-resilient livelihood strategies for ethnic minority groups should be promoted at multiple levels and with multiple agencies
- Strengthen existing livelihood strategies and ensure climate resilience
- Disaster risk management (DRM) structures and capacities should be strengthened, including for adaptation planning itself
- Access to timely, accurate and useful climate information should be facilitated

**Based on the analysis there are actions that other actors could take to address the vulnerabilities and capacities of ethnic minorities. These include:**

- Ensure there has been a robust analysis undertaken of the climate and disaster resilience of future investments
- Invest in Community Based Disaster Risk Management at local level, as well as in emergency response
- Make resources available for implementation of national policies at local level
- Promote integrated planning processes – across multiple levels
- Improve service provision to ethnic minority communities





**Vietnam's ethnic minorities in the northern mountainous region are substantially poorer than Vietnam's ethnic majority Kinh. Although there are important socioeconomic differences among the 53 ethnic minority groups in Vietnam, including distinct cultural and linguistic groups, a Vietnamese person belonging to an ethnic minority group is more likely to be born poor than their Kinh countrymen and women.**

While national poverty rates in Vietnam have decreased dramatically in recent decades, the poverty rate among ethnic minorities remains high and the gap between them has increased.<sup>6</sup> While consumption levels doubled for all ethnic groups from 1998 to 2006, the gap in average consumption levels between ethnic minority group and the ethnic majority groups actually widened from USD107 to USD194 in the same period.<sup>7</sup> Ethnic minorities in Vietnam lack the same opportunities to improve their situation. They are typically remote and their livelihoods are heavily reliant on natural resources, which depend on weather and climate conditions for productivity, and often have lower productivity land. They typically have less access to education, formal financial services and markets, which limits their opportunities for development; persistent stereotypes also hold back ethnic minority progress.<sup>8</sup>

Importantly, within ethnic minority groups the burdens of poverty tend to fall more heavily on women because of factors including lower levels of education, less access, ownership and control of productive assets and different social networks to men, which all lead to lower economic productivity and income generation and weaker bargaining positions in the household.<sup>9</sup> Within these communities, cultural norms continue to place women in a subordinate position where their access to assets, services, knowledge, and decision-making starkly varies from men.<sup>10</sup> Women and girls in Vietnam, especially among ethnic minority groups, are considerably disadvantaged in terms of the nature and quality of opportunities and resources available to them.<sup>11</sup>



Woman in Bac Kan holding traditional tool to cut hill-rice.

Image © CARE

**Though they have contributed the least to causing the problem, the world's poorest people are already affected by climate change because of their poverty, marginalisation and lack of access to information and resources.**

People in many parts of the world are already feeling the impacts of climate change – including rising temperatures, changing rainfall patterns and changes in the frequency and intensity of extreme weather. Though they have contributed the least to causing the problem, the world's poorest people are already affected by climate change because of their poverty, marginalisation and lack of access to information and resources. The latest report from the Intergovernmental Panel on Climate Change (IPCC) tells us that climate change is already happening, that it is very likely the result of human activities, and that we are now committed to a certain amount of change, even if there were to be immediate and drastic reductions in greenhouse gas emissions.<sup>12</sup> The implications of climate change are not uniform within countries, communities and even within households. It is important to understand the different vulnerabilities and capacities of all groups to best target adaptation initiatives in response to the immediate and long term challenges posed by climate change. CARE takes a holistic approach to understanding vulnerability to climate

change and recognises that there are multiple factors that shape people's vulnerability and capacity to adapt. Exposure to climate hazards and changing climatic conditions such as temperature and rainfall are only part of the picture – socio economic factors are also critical.

This report explores the vulnerability to climate change of ethnic minority groups in the northern region of Vietnam and their capacity to adapt. It is based on a study conducted as part of CARE Vietnam's Civil Action for Socio-economic Inclusion in Sustainable Development (CASI III) Project. It presents an analysis of the vulnerability and capacity of men and women in ethnic minority groups, and puts forward a set of recommendations for addressing the particular vulnerabilities and capacities of these groups. The analysis and recommendations are primarily intended to inform future planning by the CASI III project, however they include some insights that may be useful more broadly in Vietnam and for others working with ethnic minority groups on adaptation.



## CARE's work with Ethnic Minorities in the Northern Mountains of Vietnam

CARE International in Vietnam has been implementing a long-term program to support poverty reduction and sustainable development among ethnic minority groups of Vietnam. Within this program CARE is implementing the CASI project - Civil Action for Socio-economic Inclusion in Sustainable Development for northern ethnic minorities in Vietnam (CASI III) 2010-2015, that builds on CASI II (2004-2009). CASI has the overall goal that "marginalised ethnic minorities in northern Vietnam are enabled to determine and realise their own equitable and sustainable development, with dignity".

The project design for CASI III is based on a study into the underlying causes of poverty for ethnic minority groups in the northern mountainous area of Vietnam. Underlying causes of poverty are most often the result of a combination of political, social, economic, and environmental factors that are related to the systemic and structural underpinnings of underdevelopment that exist at the societal and even the global level. These factors are both complex and interrelated. This is certainly the case for ethnic minorities in Vietnam and particularly for ethnic minority women. CARE believes that in order to affect meaningful and sustainable change for target populations, programming must seek to tackle the underlying causes of poverty, not simply the symptoms of poverty itself. Consequently, CARE designs long-term programs based on an analysis of these deeper causes.

This report contributes to the project's understanding of the dynamics of vulnerability to climate change and disasters and the priority adaptation issues for ethnic minority groups in the CASI III project area.

### The project area

The four CASI project provinces are Thanh Hoa, Yen Bai, Bac Kan, and Lang Son within the northern mountainous region of Vietnam.<sup>13</sup> (See Figure 1 below) The different ethnic groups include Thai and Giay in Yen Bai province, Tay and Dao in Bac Kan province, and Thai and Kinh in Thanh Hoa province. Whilst there are 53 ethnic minority groups in Vietnam and approximately 15 in the northern region, in some provinces a single group dominates. This is the case for Bac Kan (the Tay) and Lang Son (the Nung).<sup>14</sup> In the project sites ethnic minority groups are in the majority. What follows is a brief snapshot of each of the provinces.

### LANG SON PROVINCE

The population of Lang Son province in 2010 was 735,600 spread at a density of 88 people per square kilometre over a total land area of 8,327.6 square kilometres. The poverty rate in Lang Son in 2010 was 27.5%.

Lang Son is 155 kilometres north-west of Hanoi, set in karstic limestone mountains and valleys. Mountains and forests comprise 80% of the province's area and the average altitude of the province is 251 metres above sea level. Lang Son has a tropical monsoon climate with a dry and a rainy season. Annual average temperature range is 17–22°C, mean humidity is 80–85% and mean rainfall is 1,200–1,600mm/year. The rainfall is highest in the hot season and lowest in cold season.

The ethnic groups that inhabit the province are Nung 43%, Tay 36% and Kinh 16.5%. The remainder are Dao, Hoa, Sán Chay and Hmong. Lang Son has one city, ten rural districts, five precincts, 14 sub district towns and 207 communes.

# 27.5%

**The poverty rate in Lang Son province in 2010.**

### BAC KAN PROVINCE

The population of Bac Kan province in 2010 was 296,500 spread at a density of 61 people per square kilometre over a total land area of 4,859.4 square kilometres. It is one of the least populated provinces in the northern midlands and mountain areas of Vietnam. Bac Kan province is one of the poorest provinces the northern mountainous Region and in Vietnam overall. The poverty rate in Bac Kan in 2010 was 32.1%.

Bac Kan is between 500–1,000 meters above sea level and its topography is mainly midlands and mountains with very steep slopes up to 20°. Many major rivers originate in Bac Kan province including the Gam river, Cau river, and the Bac Giang river. The steep slopes combined with numerous rivers and high rainfall make flash floods common the province. Bac Kan has a tropical monsoonal climate with a dry and a rainy season. 88–90% of annual rainfall comes between May and October. Lower rainfall at other times in the year makes water shortage a common issue in the dry months.

The ethnic groups that inhabit the province are Tay 54%, Dao 16.5% and Kinh 13%. The remainder are Nung, Hmong and smaller groups. Bac Kan has one main town, seven rural districts, four precincts, six sub district towns and 112 communes.



Figure 1: CASI project areas shaded in orange

## THANH HOA PROVINCE

In 2010, Thanh Hoa had 3,406,800 people spread at a density of 61 people per square kilometre. The poverty rate in Thanh Hoa in 2010 is 25.3%. Thanh Hoa is in the priority economic zone in northern Vietnam. It is the gateway connecting the North and the Central regions of the country, with many transport corridors including a railway, major roads, Nghi Son deep water harbor and river and stream systems that are convenient for transportation within the country and to the port. Thanh Hoa has one city, two main towns, 24 districts, 22 precincts, 30 sub district towns and 585 communes.

Thanh Hoa has diverse topography with three distinct regions – delta, midlands and mountains. The average height of the mountainous region is from 600–700m with slopes up to 20°. The Ma river, Bang river, Yen river, Cuu Long river, Red River delta and Hoat river all reach the delta in Thanh Hoa. Thanh Hoa has a tropical monsoonal climate with four distinct seasons of spring, summer, fall and winter. The annual average rainfall is around 1600–2300, falling on 90–130 days of the year.

The relative humidity is 85–87% and the average daily sunshine is 16–18 hours. The daily average temperature is 23–24°C, declining gradually towards the high mountains. With rainfall, high temperatures, and plentiful light, it has favourable conditions for agricultural, forest, and viticulture.

The ethnic groups that inhabit the province are Kinh 83%, Muong 10%, Thai 6% and a small number of people from other groups (H'mong, Dao, Tho, Hoa). Ethnic minority groups live mainly on the high mountains and border area of the province.

## YEN BAI PROVINCE

In 2010 Yen Bai was home to 746,400 people spread at a density of 108 people per square kilometre over a total land area of 6,899.5 square kilometres. 80% of them rely on agriculture and forest products. The poverty rate in the province is 26.5%.

Yen Bai is a mountainous province in the northern part of northern-central Vietnam with an average elevation of about 600 metres above sea level. The province lies about 183kms from Hanoi on the 340km Lao Cai to Hanoi road. It is characterised by rugged mountains rising from east to west and from south to north. The Hoàng Liên Sơn mountain range runs through the province. The Red (or Thao) river and the Chay river flow through the province. The valley created by these two river systems in the Yen Bai Province is fertile, though uneven territory. The Muong Lo plain is the rice bowl of the province. Besides the two main rivers, the province has about 200 canals, small streams, large lakes and swamps. Thac Ba Lake is an artificial lake built to run the Thac Ba hydro-electric plant, one of the first large hydropower projects in Vietnam. It has an area of 23,400 hectares and 1,331 islands and hills. Thac Ba Lake has changed the climatic pattern in the western districts of the province, to a moderate climate from its previously hot and dry conditions.

The main three ecozones of the province are rainforest, subtropical and temperate mountainous zones. A 20,293 hectare conservation area Mu Cang Chai Species/Habitat Conservation Area (MCC SHCA) was established in 2004 to protect the endangered mountain wildlife in Cang Chai district on the border of Lào Cai Province.

The province experiences a tropical monsoon season. The mean temperature in the province at elevations above 1500m is about 20°C and drops to 0°C with frost and snow



in some parts in the colder months. Frequent drizzle is experienced during the late winter months, earning Yen Bai the title “drizzle centre of the country”. The mean temperature for the district is in the range of 18–28°C.

There are approximately 30 ethnic groups in Yen Bai, including Kinh 49.6%, Tay 18.58%, Dao 10.31%, Hmong 8.9%, Thai 6.7% and Cao Lan 1%. Yên Bái has one city, one town, seven districts, 11 rural districts, 10 precincts and 159 communes. Van Chan is ranked among the most remote and poorest districts in the province. There are 31 communes in Van Chan district of which 16 are classified in the National Program for Hungry and Poverty Alleviation as communes facing particular difficulties.

## Methodology and analytical framework

CARE takes a holistic approach to understanding vulnerability to climate change, recognising that there are multiple factors that shape people’s vulnerability and capacity to adapt. This report presents the analysis conducted using the Climate Vulnerability and Capacity Analysis (CVCA) Handbook.<sup>15</sup> The CVCA Handbook is organised around CARE’s framework for community-based adaptation (CBA). The CBA framework presents a range of “enabling factors” which must be in place at household/individual, community/local and national levels in order for effective community-based adaptation to take place. The enabling factors fall under four inter-related components: climate-resilient livelihoods, disaster risk reduction, local capacity development and underlying causes of vulnerability.

Because vulnerability to climate change can vary within countries, communities and even households, effective adaptation requires context-specific activities, with strategies targeted to meet the needs of different vulnerable groups. Local and national policies and institutions play a critical role in shaping people’s capacity to adapt to climate change. This report includes an analysis of issues at regional and national level in an effort to understand the role played by the enabling environment in determining climate vulnerability and capacity for the groups in the project area.

The CVCA provides guidance and tools for participatory research, analysis and learning to guide the analysis of these enabling factors. It includes field guides, guiding questions and recommended tools and resources for gathering and analysing information. The CVCA process

guided the analysis of the existing situation with respect to these enabling factors to develop a picture of the complex and interrelated factors that drive poverty, vulnerability to climate change and capacity to adapt.

## CARE takes a holistic approach to understanding vulnerability to climate change, recognising that there are multiple factors that shape people’s vulnerability and capacity to adapt.

The research is based on qualitative as well as quantitative data and attempts to draw together a range of sources, including the Baseline Summary Report,<sup>16</sup> draft district CVCA reports, a draft report on gender and climate change<sup>17</sup> and original field visit notes. In addition, secondary research, policy analysis and key informant interviews were important sources. It also draws on the analysis of the underlying causes of poverty conducted for the project area.

The baseline survey itself was carried out in six provinces in the total of 15 northern mountainous provinces in Vietnam, including: Thanh Hoa, Yen Bai, Bac Kan, and Lang Son province. Hoa Binh, Dien Bien were added for the purposes of additional data and comparison where relevant. The surveyed ethnic minority groups include Thai, Day, Muong, Kinh, H’mong, Tay and Dao. In total 12 communes in eight districts were visited, 1,151 people (598 women) were involved through a mix of 201 focus group discussions, 151 interviews.

Where relevant and possible quantitative data is provided, however some specific information has been omitted to maintain the confidentiality of some informants.

The communities engaged in the field components for this report (which added on to the extensive field work undertaken in the baseline phase of the project) were selected to provide evidence for the general findings of the underlying causes of poverty analysis and to supplement initial CVCA fieldwork. They do not reflect a statistically significant sample of all communities in the area, and time and resource constraints necessarily limited the number included. Whilst the field work was carried out in 2011 the findings are still relevant for ethnic minority adaptation programs.

## The climate context: climate science and local knowledge

This section presents a summary of the available scientific climate information that is relevant to the northern mountainous region of Vietnam, including locally observed changes to date as well as climate projections. Available climate and weather data, and climate change projections, were combined with community experiences to develop a picture of trends and patterns that are emerging. This informs the analysis of climate vulnerability and capacity, and new and emerging data and research are tracked by the CASI project to ensure up to date information is used in planning and implementation.

One of the common challenges of working at the local level on climate change adaptation is the lack of localised historical weather and climate information and the often-limited climate projections available at the sub-national level. In the case of Vietnam, the availability of information varies: in some places only national data is available, in others some data is available for a province. Local weather observations often vary from regional and national observations at the local level, and this is particularly the case in a mountainous area such as northern Vietnam. To develop a more grounded understanding of climate and weather patterns experienced by and projected for the northern mountainous area of Vietnam, scientific information is complemented with perspectives from community members and district sources where available. This provides a more meaningful basis for the analysis of the interrelated factors that determine the climate vulnerability and capacity of ethnic minority groups in the northern mountains that follows.

Vietnam is likely to be one of the most significantly impacted nations in the world from climate change due to its very long coastline, high dependence on agriculture, and relatively low levels of development in rural areas. Therefore it is extremely important to make an effort to understand the implications of climate change for the country and furthermore for the different groups within the country. This is particularly the case for rural ethnic minority groups that are remote and rely heavily on natural resources. Whilst they are not directly impacted by sea level rise there are a range of other significant climate impacts. National projections of climate change impacts to 2100 include a 10% increase in rainfall in the wet season and decrease in dry season

of 10% or more, increased intensity and frequency of storms and floods, and the national government is planning for sea level rise of at least 1 metre by 2100. However different regions in Vietnam are likely to experience unique climate impacts based on existing climate variability and geography.<sup>18</sup>

National and international attention has focused on the impacts of climate change on coastal and delta areas in Vietnam from sea level rise and typhoons in particular. In contrast, there has been little attention on the mountainous areas in the north of the country, and in particular on the specific challenges faced by ethnic minority groups living in this region. Ethnic minorities, and the organisations that work with them, have not received the attention and support of their counterparts in southern parts of the country. This has the potential to further limit the ability of remote ethnic minorities to access support and resources to adapt to climate change.

### CHANGING AVERAGE TEMPERATURES

Over the 50 years from 1958–2007, the annual average temperature in Vietnam increased 0.5 to 0.7°C. Winter temperatures increased faster than those in summer and temperatures in northern climate zones increased faster than those of southern climate zones. The annual average temperature for the last four decades (1961–2000) was higher than that of the three previous decades (1931–1960).<sup>19</sup>

The report *Climate Change, Sea Level Rise Scenarios for Vietnam* produced by the Ministry of Natural Resources and Environment in 2009, projects that by the end of the 21st century average temperatures in Vietnam will rise 2.3°C relative to the average of 1980–1999. The increase in temperature in the range of 1.6–2.8°C are expected in different climate zones, with temperatures in northern and north-central climate zones of Vietnam increasing faster than those in southern zones. In each climate zone, winter temperatures are expected to increase faster than summer ones.<sup>20</sup>

### CHANGING TEMPERATURE EXTREMES

In the last two decades the number of cold fronts affecting Vietnam declined markedly. However in the same period anomalous cold events took place more frequently, for example the extremely damaging cold period during January and February 2008 in northern Vietnam, which lasted for 38 days.<sup>21</sup>

Surveys carried out in the field for this report, for example in Na Ngoa village and Pac Giau Village in Dong Thang commune, found similar results with the community reporting that they had experienced more very hot and very cold days and periods. The villagers consulted also consistently reported that the dry seasons were becoming longer and hotter and that there had been more severely cold days.

### RAINFALL PATTERNS AND EXTREMES

The report *Climate Change, Sea Level Rise Scenarios for Vietnam 2009*<sup>22</sup> found that annual rainfall decreased over northern climate zones while it increased over southern ones. On average for the whole country, the rainfall over the past 50 years decreased by about 2%. It projects that both annual rainfall and wet season rainfall will increase, while dry season rainfall will decrease, especially in southern climate zones. For the whole country, annual rainfall by the end of the 21st century is projected to increase by 5% compared to that of the period 1980–1999. In northern climate zones, rate of rainfall increase will be more than that of southern ones, however it did not project the seasonal distribution of this rain.

The villagers consulted consistently reported the later onset of summer rains and that the rains then fell in a shorter period. Both of these factors contribute to an increase in the duration and severity of drought conditions and flash flooding. This pattern has been so notable in some areas that traditional methods of predicting flooding are becoming ineffective such as listening to the sound of the rain on the river rocks. Almost all of the villagers volunteered that deforestation in the watershed is a contributing factor to incidences of flooding.

### TROPICAL STORMS

Vietnam has more than 3,200km of coastline and historically experiences an average of two tropical storms a year. Tropical storms influence the weather in mountain areas resulting in periods of heavy rainfall, floods and landslides. The storm track has started to be observed to be moving southward and the storm season tends to end later. More tropical storms with abnormal movement has also been observed in recent years.<sup>23</sup>



**Later onset of summer rain,  
and more intense rain, contribute to  
drought and flash  
flooding**

Floods alongside a river that is subject to flooding in Pac Giau.

Image © Julie Webb CARE



**Analysis prepared for the CASI project identifies restricted access to natural and agricultural resources as well as vulnerability to natural disasters as key underlying causes of poverty. Underlying causes of the existing food insecurity which ethnic minorities experience are described in the report as a cycle driving increasing food insecurity. Climate Changes will accelerate this cycle.**

## **Analysis of vulnerability and adaptive capacity of ethnic minority groups**

The range of factors contributing to the vulnerability of ethnic minority communities to climate change are typically lost in national analyses of climate change vulnerability. These analyses tend to focus on exposure to climate hazards, with limited understanding of adaptive capacity. Further, the analyses do not fully take into account the sensitivity of different groups to weather and climate, such as gender dimensions, relative wealth, variations in access to information and decision making or the contribution of social exclusion ethnic minorities vulnerability to climate change.

CARE's community-based adaptation framework attempts to bring together information on climate, livelihoods, disaster risks, local capacity and the socio-economic and political context. This is the basis for developing a clearer picture of who is vulnerable, to what, and why. This section presents a summary of the analysis, organised around the main components of the CBA framework – livelihoods, capacity, disaster risk and underlying vulnerability. The analysis reveals the complex picture of climate vulnerability and capacity in ethnic minority communities in the CASI project area, who already live with complex underlying causes of poverty.

**Women's work is often not recognised or valued as it is considered as delivering 'only' household subsistence rather than income generation.**

The underlying causes of the existing food insecurity experienced by ethnic minorities are described in the analysis of the underlying causes of poverty prepared for the CASI project as a cycle:

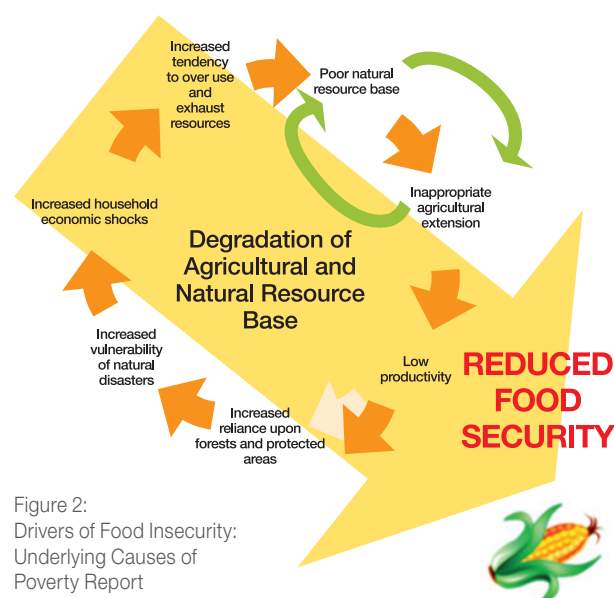


Figure 2:  
Drivers of Food Insecurity:  
Underlying Causes of  
Poverty Report

Restricted access to natural and agricultural resources as well as an existing vulnerability to natural disasters are key underlying causes of poverty. Climate change will accelerate the existing cycle of food insecurity through further undermining the productivity and quality of the natural resource base, changing incidences of natural disasters, decreasing the economic and social resilience of households and undermining community health. Furthermore, the already limited access of ethnic minority groups to appropriate government services, existing social exclusion and ongoing limited access to markets constrain the opportunities that could be available to them to adapt to climate change. These factors are considered in the sections that follow.



A typical home garden in the project area in Lang Son.

Image © Julie Webb CARE

## Climate change and livelihoods

Ethnic minority communities are typically remote and their livelihoods are heavily reliant on natural resources. Weather conditions and climate patterns greatly affect productivity. The current livelihood activities of the surveyed communities include growing rice, maize and tea; rearing pigs, cows and chickens. Some households sell some produce, whilst others keep it solely for domestic use. The rice is grown using either a single or a double annual cropping cycle depending on access to water for irrigation (an indicator of the quality of the land). Land with no access to irrigation (usually further from a water source) can only produce one crop a year and production is therefore highly dependent on the timing of the rains.

There are clear gender dimensions to livelihood activities. In rice cultivation for instance, Dao and Tay women are often responsible for sowing seeds, weeding, tending the plots and harvesting – tasks that were described as “light” work. Men of both ethnic groups are responsible for ploughing, pumping water and spraying pesticides and insecticides on the plots – considered as “heavy” work. Women’s work is ongoing throughout the year, whereas men’s work takes place over shorter periods. Similarly, there are distinct roles related to the extraction of forest products. Dao and Tay women go to the forest to collect Canarium tree oil, mushrooms and bamboo shoots, while men collect honey, dig up bulbs and tubers, hunt and trap forest animals, and collect wood products.<sup>24</sup>

Despite these distinct and important tasks, women’s work is often not recognised or valued within families and communities, as it is considered as delivering ‘only’ household subsistence rather than income generation. Men tend to be the ones who take produce to market,

and control household income and expenditure. Women are often uninformed about how the amount of money they receive from their husbands relates to the total cash income from market sales. However, there are variations between ethnic groups – in Tay communities, for instance, women usually manage the money so they know the amount of money in the household budget. Variations in gender roles must be well understood in an analysis of climate change, as impacts and capacity to adapt will also vary.

Although there is a significant reliance on non-timber forest products for cash income, there is also widespread reporting of degradation of forest ecosystems due to illegal logging and over-exploitation. Beyond agriculture and the extraction of forest resources, sources of income in communities are limited, particularly for women. Other than in households where a member (usually male) has moved to a larger city or town to find paid work, the communities rely virtually completely on natural resource-based livelihoods.

There are a number of key consequences for livelihoods from the observed changes in climatic patterns and extremes. Although quantifying actual or projected patterns at the local level is beyond the scope of this research, the trends discussed in communities are consistent with emerging patterns in weather and climatic data. Key patterns are more frequent temperature extremes (hot and cold), below average rainfall during the dry season, increased incidences of flooding, and an overall increase in rainfall but with decreasing predictability. The following is a summary of the impacts cited by the focus group participants, the coping strategies they are currently employing and some potential strategies for longer-term adaptation.

## FLASH FLOODING AND LANDSLIDES

Communities frequently cited that flash flooding and landslides have a severe impact on the availability of productive land, which is already limited because of the steep terrain and population pressures. Whilst the government usually provides immediate relief for the loss of crops following flood and landslide events, the rehabilitation and recovery of productive land is not supported. This has serious implications, and can require months of hard labour to clear rubble and sand. As a result, land can be left fallow for the foreseeable future. This is particularly problematic for poorer and otherwise disadvantaged households that already have limited land or who depend only on land that can only support a single crop each year, as they are already disadvantaged.

Women often bear the burden of post-flood recovery, with responsibilities for cleaning and clearing houses of debris. They are also heavily involved in community work such as environmental sanitation and ditch dredging. Existing ethnic minority poverty is exacerbated by the combination of climate hazards and their limited capacity to recover or potentially to adapt. Possible interventions by households and communities to reduce disaster risk, such as tree planting for riverbank strengthening, are limited due to the lack of access to resources in the community and limited support.

**Women often bear the burden of post-flood recovery, with responsibilities for cleaning and clearing houses of debris, washing clothes. They are also heavily involved in community work such as environmental sanitation and ditch dredging.**

## CASE STUDY: CLIMATE HAZARDS COMPOUNDING EXISTING POVERTY

A 31 year old mother of two sons, aged 11 and 6, reported that she has to cook rice porridge with salt 'congee' for her family to make sure her limited rice supply can last the season. Her family has 1,000 m<sup>2</sup> of land for rice, 700 m<sup>2</sup> for maize and 10 ha of forest. Her field is in the upland area of the village where there is no irrigation system. If it rains, she is able to cultivate two crops but most of the time she only cultivates one. If it doesn't rain for a long time, the soil will get too hard for any cultivation, even for maize. When this happens she has to pump water from the stream to her field, which costs a lot of money. In her words, "the only relief is when god brings the rains". In a good year she can feed her family for nine or ten months of the year and they have to find a way to buy food for the rest of the year, usually by selling resin from the forest.

In 2008, there was severe flash flooding in the district, the biggest in 40 years. It rained heavily for days, and the rain sent large amounts of stones, sand and other debris into fields. 360m<sup>2</sup> of her land was covered in debris, and even after three years she has still not been able to recover the land for cultivation. With reduced land, she and her husband have to work harder to collect more resin from the forest to buy food for their children. When asked her about her wishes for the future, she wished for an irrigation system so that she could cultivate her land even in dry times.



## TEMPERATURE EXTREMES

Both hot and cold extremes were frequently cited as of concern to villagers. These result in lost production days whilst waiting for the extremes to pass, as well as crop loss depending on when in the cropping cycle the extremes occur. There was also a common concern about the impact of temperature extremes on human health. Children were frequently sick in the hot weather after playing in dirty water, and during cold snaps they often came down with colds, coughs and fevers. Women were unable to work in the field or collect forest products in these situations, leading to lost productivity. In addition, temperature extremes were also linked to animal disease and mortality, increases in pest outbreaks (such as chicken mites) and damage to stored food. Prolonged cold spells also increase the need for firewood. This adds to the burden on women and female children, who may spend up to two hours a day collecting firewood, as well as increased forest degradation.



A field left fallow because of flash flooding in Pac Giao Lang Son  
Image © Julie Webb CARE

## CASE STUDY: HEALTH IMPACTS COMPOUNDING LIVELIHOOD INSECURITY

A 21-year-old mother of two old young children said that in recent years it has been getting hotter in the months of June and July, and that 2010 was the hottest summer that she can remember. That year her two children got high fevers, diarrhoea and coughs. The children often played outdoors in the heat with water around the home and in the river and streams nearby. The water was not clean and the food stored at home was not hygienic.

When the children were not well, she stayed up all night to take care of them. This was physically and emotionally stressful. According to the young mother many of the 18 children in the village under five years old are often sick in the summer. She tries to cure the diarrhoea and coughing that her children suffer using traditional medicines from the forest. If the traditional medicine does not work, she takes her children to the commune health center and then to the district hospital. She told us that villagers have to cover the costs of the travel, hospitalisation and treatment costs, and pay for accommodation and food for the parents during treatment. Villagers that have a 'poor household' card can get free treatment, but still have to cover the additional expenses. Women cannot do any work in the field or in the forests when the children are sick so they lose valuable production time. She observed that the increased heat is causing higher rates of childhood illnesses, and in turn this leads to more loss of productivity.



During temperature extremes, children are particularly vulnerable to health impacts

Image © CARE

**Community experiences of changing weather patterns are that dry seasons are longer, that rains come later, and that floods are more frequent. This results in less available water, and when it is available it is more likely to be polluted and dirty.**

## **DROUGHT**

Drought was a commonly reported hazard, characterised variously as late or reduced rainfall over the wet season, or a longer and earlier dry season. Drought has a direct impact on crop production and an indirect impact on human health due to lack of clean water for domestic use. Many people did not have secure access to water for domestic use and irrigation, and more frequent occurrence of drought exacerbates this existing vulnerability. They perceived that the increased occurrence of drought is due to a combination of changes in weather patterns, deforestation and the activities of upstream water users.

Villagers reported that water availability was a particular concern in the dry season from October to May, when households often lack both irrigation and domestic supply. Community experiences of changing weather patterns are that dry seasons are longer, that rains come later, and that floods are more frequent. This results in less available water, and when it is available it is more likely to be polluted and dirty. Women from households that have no access to a water pipe have to carry water from the spring to their houses, which can take several hours each day. Women are also responsible for the irrigation of fields and vegetables. This task increases the work burden of ethnic minority women, leaving less time for other productive, family and cultural activities.



## Local capacity to address climate change

It is important to explore the policy and institutional environment within which a community or group lives. This enabling environment has the potential to contribute to the adaptive capacity or to hold it back and exacerbate vulnerabilities.

At the Provincial level, the departments interviewed reported they were still waiting on guidelines on what their role with respect to climate change is in practice. The Department of Natural Resources and Environment (DONRE) report that their staff are aware of climate change but do not have the capacity, in terms of time, resources or guidance, to take action on climate change. The Department of Agriculture and Rural Development at provincial and district levels heard about climate change quite frequently but they did not have specific understanding about it and its likely impacts. The mainstreaming of climate change into different sector development plans at the different local levels is still a challenge.

## Disaster response

**There are examples of disaster response at the local level but risk reduction and recovery was limited.**

Mass organisations<sup>25</sup> are an important element at district and commune level. They have limited capacity to respond to climate change. They are aware of ongoing climate hazards and impacts experienced in the local area, but not of changing risks and trends or of the potential action that people can take. They are more frequently engaged in the implementation of recovery efforts after an event than in risk reduction activities.

Local staff at provincial and district levels reported that they lack skills in facilitating participatory planning and implementation. This lack of local participation in planning may result in inappropriate interventions or ineffective local risk management.

## Managing changing disaster risks

An average of one million Vietnamese are affected by disasters annually.<sup>26</sup> In the northern mountainous area, the extreme temperatures, landslides and drought lead to direct and immediate consequences such as damage to crops and infrastructure, and loss of life. They also undermine already limited access to important natural resources such as productive land and water.

Disaster risk management in Vietnam is coordinated foremost by the Central Committee for Flood and Storm Control (CCFSC), chaired by the Minister of Agriculture and Rural Development. Central government structures are supported by systems at the provincial and local levels. The CCFSC has responsibility for gathering data and monitoring events, issuing official warnings, and coordinating response and mitigation for these events. Various ministries are represented on the committee including the hydro-meteorological service and the Vietnam Red Cross.

The Vietnam Red Cross is the main civil society agency for relief and risk reduction across the whole country, with a formal role in government committees and systems. Red Cross activities are commonly integrated with activities of the mass organisations at the local level.

At the local level, loan programs operated by mass organisations, for example for house rebuilding after a disaster, are seen as very effective by communities. The positive outcomes from some specific disaster risk reduction projects by non-government organisations, including international agencies, are operating in the northern mountainous region but have not yet been replicated by the local authorities on a broader scale.

At the provincial, district and commune levels, local Committees for Flood and Storm Control are responsible for supporting implementation of flood and storm control measures such as dyke protection, flood and storm mitigation, preparedness and response. There were examples of disaster response at the local level benefiting from external resources – financial relief as well as food and clothing. However there was limited support for recovery, risk reduction and risk management. This is the case beyond flood and storm events.

Currently local community based risk management plans to 2020 are in development across all administrative tiers, and include both “hard” and “soft” measures. The mechanism and regulation for disaster management is





Typical village access road in Bac Kan  
Image © CARE



Typical view of mixed use landscape, Pac Giau,  
Lang Son. Image © Julie Webb CARE



Family holding honey bottle, Thanh Hoa. Image  
© CARE

**The positive outcomes from some specific disaster risk reduction projects by non-government organisations, including international agencies, are operating in the northern mountainous region but have not yet been replicated by the local authorities on a broader scale.**

in place, and there is ongoing work being done by various organisations and government to improve their consistency and their devolution to the district to commune level. In addition resourcing of key staff, coordination, appropriate equipment and the participation of local people in the development of these plans are important for their effectiveness.

**To date much of the emphasis has been on infrastructure such as dykes and irrigation canals with limited attention on activities such as capacity building, awareness raising, small scale mitigation works, emergency response equipment.**

To date much of the emphasis has been on infrastructure such as dykes and irrigation canals with limited attention on activities such as capacity building, awareness raising, small scale mitigation works, emergency response equipment for village teams or locally adapted early warning systems. For example, at one district equipment such as phones, lifejackets, loud speakers and tents were in place, but not in sufficient numbers to be distributed to commune levels, and training in emergency response was delivered, but it was limited and not seen to be entirely relevant to the area.

In 2009, the Prime Minister issued a decision to establish the National CBDRM program that will implement CBDRM programs in the 6,000 most vulnerable communes – i.e. almost two-thirds of all communes in the country. This is seen by many organisations as a positive step and a transfer of funding to the provinces and below to roll it out would be beneficial.

In some cases requests for support from local government, for example for physical infrastructure to reduce ongoing risks, were not responded to. Some communities also reported that some infrastructure constructed had exacerbated disaster risk for example when a road was constructed in a location that cut off a stream, increasing flood risks. The picture is not uniform, however, and some villagers reported effective projects like the construction of dams and actions to prevent landslide were protecting cultivated land.

Integration of disaster risk reduction and climate change adaptation into government actions, plans and processes was not strong at any level. Whilst some district officials are aware of the linkages between forest degradation and disaster risks, and climate change and disaster risk, the mechanisms and systems for both are generally separate and supported by separate budgets and processes. Capacity development at all levels is needed on disaster risk reduction and climate change and on the current policy and legal framework.

## Underlying causes of vulnerability to climate change

As well as the climate and livelihood linkages, disaster risk and the policy and institutional context, there are other underlying causes of climate vulnerability. These are things that may not be directly related to climate change but which contribute to the vulnerability and indeed the potential to adapt, to climate change. To fully understand the climate vulnerability and capacity of ethnic minorities in the northern mountains of Vietnam it is vital to also explore these causes.

### **LACK OF SECURE ACCESS TO PRODUCTIVE LAND IS A KEY CONSTRAINT TO HOUSEHOLD LIVELIHOODS.**

The mountainous terrain means that arable land is physically limited, and can be of low quality with rocky and low-fertility soils. Not only is the area and quality of arable land contributing factors to poverty within communities, the physical location of the land is also a factor. Typically, land that is far from a water source or not on an irrigation channel can only be farmed for a single crop each year. This significantly limits production and increases vulnerability of those landowners to weather related hazards. In the face of late rains, households can pay for fuel to pump water in areas where a pump, fuel and money is available, but are otherwise likely to lose their year's crop. In this situation, exploitation of forest products becomes an even more important resource. As highlighted above, the loss of land from flash flooding and landslides is exacerbating amount of available productive land. A mixed picture with respect to land tenure can exacerbate this.

### **LIMITED LOCAL PARTICIPATION IN PLANNING AND TARGETING OF APPROPRIATE GOVERNMENT SERVICES ARE MAJOR LIMITING FACTORS TO ADAPTIVE CAPACITY.**

The ethnic minorities were found to have a good idea of what their needs are, however lack of participation and meaningful engagement in planning has meant that when there is government support or service delivery it can be inappropriate to the local context.

For example, the timing and content of agricultural extension training subjects limited its effectiveness where it had been delivered. As weather patterns become more unpredictable and indeed change over time this patchy support will become an even more serious concern for ethnic minority communities.

Many villagers already plant a mix of local and government distributed crops on single or double-crop land. Whilst they were found to have a higher yield, government distributed crops were reported to be more susceptible to storage pests and were less resilient to drought or high temperatures. In addition all information provided by extension services is in the Vietnamese language, which is not spoken or read by many ethnic minorities and even less often by ethnic minority women.

### **REMOTENESS CONTRIBUTES TO A LACK OF ACCESS TO MARKETS AND LIMITED GOVERNMENT SERVICE DELIVERY.**

Lack of access to markets and government services combine to contribute to what have, so far, been limited opportunities to diversify or improve livelihoods. Remoteness limits delivery of government services that could improve productivity or diversify incomes. Access to information via newspapers and magazines is also limited. Women have particularly limited access to markets and other services, as they typically cannot ride motorbikes (for cultural reasons or due to low literacy rates that means they are unable to pass written exams) and are constrained in their ability to travel away from the family home. All of these things contribute to the vulnerability of ethnic minorities but also importantly limit the opportunities they have to adapt to climate change.

### **THE ENDURING RELIANCE ON TRADITIONAL METHODS AND SOME EXISTING PRACTICES CAN PRESENT BARRIERS TO ADAPTATION AS WELL AS OPPORTUNITIES FOR ADAPTATION.**

It was found that traditional habits in production may prevent the application of new technology and scientific knowledge, as can written instructions such as on agricultural chemicals being written in Kinh language. There can also be a scepticism at times about external advice even when in fact this may be useful.<sup>27</sup>

Changing preferences for traditional crafts, particularly by young people,<sup>28</sup> is limiting the market for these products. For example the traditional weaving cooperative in Thanh Hoa cannot find a market for their products due to a drop in demand.

On the other hand, the experience accumulated in traditional methods of production has been used frequently to help ethnic minorities in choosing good breed stock, predicting the weather patterns and managing

the crop schedule. However, participants reported that some of these are becoming less effective over time. For example weather forecasting methods were reported by some to be becoming less effective.

### **ETHNIC MINORITY WOMEN AND MEN ARE AFFECTED DIFFERENTLY BY CLIMATE CHANGE, AND HAVE DIFFERING ABILITIES TO RESPOND.**

While the lives of women and men are both affected by disasters and climate change, their vulnerability and adaptive capacity are different. This is due to many cultural, economic, social and institutional factors: disasters and climate change have gender implications, which may be expressed or hidden. Whilst women are more vulnerable to disasters and climate change impacts, the roles and contribution of women in risk reduction and adaptation efforts are important to understand and support.

Ethnic minority women have to spend more time on unpaid jobs than men, and this unpaid work increases in times of climate and weather related stress. For example water, wood and forest product collection times increase as these resources become scarce, and in times of heat stress caring responsibilities for sick family members increases. The increase in their workload at times of stress also means they are less available for social and cultural activities. Informal social networks are of even

more importance to ethnic minority women because of their limited participation in formal socio-political organisations and community meetings.

Women's adaptive capacity is also more limited for a range of reasons. They tend to have lower language and education skills, and whilst men and women might discuss family decisions such as investment in new equipment, cropping patterns or land use, men usually make the final decision, which women then work to implement.

The gender analysis completed as part of this research found that slow onset climatic events had greater impacts on women, but that these are not yet fully recognised. The roles and capacities of women in recovering from extreme weather events are more visible, as women do many different tasks as noted above. However, the added work that slow onset climate events create, from reduced water availability, reduced crop production or increased sicknesses for example, are becoming more noticeable, but the impact of this remains unrecognised at household or community level. Typically, women are the ones to go without food when there are shortages, and this can result in nutritional problems especially when pregnant or breastfeeding. Failure to recognise these "silent" impacts may result in the failure to recognise women's roles, contributions and needs in implementing climate change adaptation strategies.



**Ethnic minority women have to spend more time on unpaid jobs than men, and this unpaid work increases in times of climate and weather related stress.**



## The enabling environment for adaptation to climate change

Local and national policies and institutions play a critical role in shaping people's capacity to adapt to climate change. Ethnic minorities in northern Vietnam are typically distant from government agencies. The government of Vietnam has initiated several programmes intended to improve the situation for ethnic minorities but it was reported that in many cases these efforts were not as targeted or appropriate as they needed to be given the diversity of locations and ethnicities. One example of this is the use of the majority Kinh language that ethnic minorities, and women in particular, may not understand. The reliance on the national language makes meaningful participation and consultation with ethnic minorities even more limited, especially for women.

Overall, the externally driven local interventions across the project area were found to be limited and there was limited capacity to address the emerging challenges of climate change for ethnic minority areas in the northern mountains. Limited participation of target communities in planning results in a range of challenges including inappropriate interventions or interventions that don't effectively meet the needs of the community

As previously mentioned, the implementation of policies and programs at sub-national levels is a common challenge, but it is exacerbated for ethnic minority communities, where those policies and plans may also not be effectively targeted. An example of this is access to climate information, a key enabler for adaptation. The National Hydro-meteorological Forecasting Centre under the Ministry of Natural Resources and the Environment undertake hydro-meteorological forecasting. The Institute of Natural Resources and Hydrology under MONRE provides research and expertise and Hanoi University of Sciences undertakes and provides predictions for wave height and direction as well as drought and rainfall. There is mass media infrastructure (loudspeakers) at the local level in all provinces although these were reported as not functioning in some places. These are used to share weather forecasts and early warnings. Weather forecasts are generally for only a few days and warnings and forecasts are not tailored for the local level. The effectiveness of a national system for early warning for the critical risk of localised flash flooding will be limited, which is particularly concerning as community members reported that traditional forecasting is becoming ineffective. In addition the information is

only provided in the national Kinh language making it inaccessible to those unable to understand – most commonly members of poorer households and women.

## Coping strategies

An analysis of existing coping methods can reveal which existing practices are effective and sustainable, and which are not. This is important to be able to know what can be built upon for adaptation to climate change. Part of the analysis for this report included consideration of existing coping strategies being used as well as recovery strategies in response to climate and weather conditions and events, and whether they are sustainable into the future.

Weather and climate have significant impacts, particularly on available water resources and animal and human health. Villagers have developed a range of coping strategies to manage these impacts.

- In the dry season, villagers in one area asked the local authority to pump water from the river to the field. However the water was polluted from an upstream factory, causing some water borne diseases.
- In the dry season villagers without access to stream water sometimes pay to hire a pump, if available in the village, and for fuel to pump water from lower streams. The financial burden can be significant.
- Villagers stored water in jars and pots for dry season. However, the solution is not effective as the quantity of stored water is rarely sufficient to meet household needs (Ba Thuoc district, Thanh Hoa Province).
- To save animals from the cold spells, some villagers build cages for them with straw, and provide stored food instead of letting them wander. However, the stored food did not last for the whole season (Ba Thuoc district, Thanh Hoa province)

In some cases coping strategies are known to be unsustainable but in the absence of an alternative, villagers continue to use them. For example villagers often cited increased use of fertilisers and pesticides as a coping strategy in response to decreased production and crop diseases. However they were well aware that over time both the soil quality and the quality of the produce decline using these methods. In addition there

is a lack of training and support in administering the chemicals so it is not possible to be sure if villagers are using the appropriate (and safe) amounts.

In addition to these coping strategies, some villagers reported family members moving out of the village for work in response to lost or decreased agricultural production. This has a complex set of ramifications for family and social life.

## CASE STUDY: MIGRATION FOR WORK

A 21-year-old mother of two young children said that her husband's parents gave them land for rice production but only a third is irrigated land. In a normal year her family has enough rice for eight or nine months of the year, and has to buy more rice from the market or borrow from relatives in the village for the rest of the year. In case of climate-related events, such as drought, they need even more money to buy rice as most of their land is rain fed. They rely on forest products for cash every month.

Six or seven men in the village have migrated to work in the Central Highlands for a year. Her husband left two months ago for Lam Dong Province in the Central Highlands of Vietnam to become a hired worker in a pine tree plantation. Her husband left against her wishes and has yet to send money back, as the company owner only pays the salaries at the end of the contract.

She is now left with two children to take care of, the housework, plus working in the field to cultivate rice and maize and income generating work from the forest by herself. In the dry season she also has to collect water for household use. She reported that oil production has declined in the forest due to over use and other collectors sometimes steal her oil. When there is heavy rain, she cannot walk to the forest as often and the rain dirties the oil at the bottom of the trees, resulting in lower prices.

## Adaptation potential

The exploration of existing coping and recovery methods revealed some important potential areas that could be built upon in future work to address climate vulnerability.

### THERE IS EXISTING COMMITMENT WITHIN COMMUNITIES TO WORK TOGETHER IN RESPONSE TO AN EVENT

After a disaster event there were examples of communities supporting individual families to recover and to rebuild community infrastructure. Whilst this was not consistent across the field sites, it suggests a foundation for building future community-based solutions in some locations.

### THERE IS DISASTER RESPONSE CAPACITY IN GOVERNMENT

Villagers reported generally positive experiences with the government and Red Cross responding to disasters through the provision of food and financial assistance for rebuilding houses. With appropriate resources and capacity support these same agencies could expand to address preparedness and risk reduction. This could

include provision of information about the kinds of government support available, targeting vulnerable beneficiaries, improved clarity of procedures, support for local people in completing application forms, and monitoring the process to ensure that those most affected are provided with support. Future government and other community based disaster risk management programs at commune and village level, should contribute to this.

### THERE IS MOTIVATION TO CHANGE AND AWARENESS OF SOME DAMAGING PRACTICES IN SOME COMMUNITIES

Some villagers had a strong interest and motivation to change their practices, but they lacked resources and information to do so. Some are already mixing cropping patterns and adjusting the seasonal calendar in response to year-by-year changes that they are anticipating. However they did not have access to forecasts to assist them. There was good awareness that chemical based agriculture is not good for the soil over the long term and there was interest in composting and alternative methods of agricultural production.

## CASE STUDY: KNOWLEDGE AND WILLINGNESS TO USE ALTERNATIVE AGRICULTURAL METHODS

The main livelihoods for one family with two children aged six and seven is rice and maize cultivation and extracting non-timber forest products from the forest. The mother reported that the timing of the dry season affects the rice crop. To ensure the crops can grow, she recently bought extra long pipes for pumping and a pump for irrigating water onto her field, which cost her a lot of money. This year, she has changed to a more drought resistant crop to grow on her field, which she got from other women in the village. She rotates the plantation of maize and peanuts to keep the soil healthy. She also knows how to use Phan Xanh (leaves of certain indigenous plants, good for compost) on the soil to make it more fertile.

### THERE ARE SOME IMPORTANT FINANCIAL SAFETY NETS

In instances of house damage or loss from floods and landslides, resources are usually available to poor households through low interest loans such as from the Women's Union. In addition, borrowing money at a low interest or no interest rate from family members was also an option for some families.

## CASE STUDY: A RANGE OF FINANCIAL SUPPORTS

A 36-year-old father of three children (17, 12 and 7) lost his house in a flash flood in 2008 and his father gave him land further away from the river. The new house cost 40 million dong, and is made from concrete, tiles and wood. He got the funds from a variety of sources: his wife was given a loan from the Women's Union of 10 million dong, at an interest rate of 0.32% per month. The government gave 2 million dong, and villagers gave him 1–2 million dong each, with no interest rate. He is making repayments at a rate of around 1 million dong a month using income from forest oil collected by his wife whilst he looks after the animals. Despite the bank account with the Women's Union being in his wife's name, he determines the investment/use of the funds, which is not an uncommon occurrence.

### THERE IS UNMET INCOME POTENTIAL FROM AGRICULTURE AND FOREST PRODUCTS, IF NECESSARY SAFE GUARDS ARE IN PLACE

There has been a government program to support villagers to plant pine trees for oil. Some have invested heavily in this and work hard to maintain the plantations, however significant returns are yet to flow. Lack of training has meant some plantations have been much less successful. With better information and outreach this could come to fruition, however safeguards are needed to ensure that additional forest clearing is not encouraged. There is also some potential for other forest products to be turned into income if they were well managed, or alternative agricultural income sources. Further research is needed to take this further.

### TRADITIONAL KNOWLEDGE AND PRACTICES ARE STILL STRONG IN SOME AREAS

Indigenous knowledge of medicine for human and animal health remains strong in many ethnic minorities. This can enhance the capacity of the local communities – especially poorer households – to deal with some illnesses. However this needs to be balanced with consideration of which methods are effective. Some of the medicinal plants can be grown in home gardens, and the traditional healers in the community and health workers for young mothers use traditional remedies for common diseases with small children, elderly people, and poor households. Many of the herbal plants can also be used to treat diseases in crops and animals, yet these need further research before effectiveness and their potential as a livelihood resource can be appreciated.



## Recommendations for the CASI III project

The above analysis illustrates the complexity of the vulnerability of ethnic minority groups in the CASI III project area. The following recommendations are specifically for the CASI III project to assist them to support ethnic minority groups in adapting to climate change.

### ENSURE THAT GENDER IS FULLY AND EFFECTIVELY INTEGRATED ACROSS THE PROJECT

Failure to recognise the gendered impacts of climate change may result in the failure to recognise women's roles, contribution and needs in implementing climate change adaptation strategies. The contribution and experience of both women and men needs exploring and promoting; and the climate change adaptation, disaster risk reduction and broader development process must include at the least the participation of both women and men. Activities in disaster risk reduction and climate change adaptation must ensure that women's needs are considered during the development and implementation of all activities. This is important in community meetings, when collecting project feedback, in gathering data (ensuring measures of participation is based disaggregation rather than based on household representation), involving local women's organisations in the project and using informal groups in the consultation processes. Specific capacity building for women and women's organisations with focus on climate change adaptation is also important.

### CONDUCT FURTHER TRAINING FOR PROJECT STAFF AND COMMUNITIES ON THE SPECIFIC SITUATION OF WOMEN IN ETHNIC MINORITY COMMUNITIES

The analysis reveals some key differences in the situations of women and men in the study communities. These observations and recommendations draw on research into gender and climate change carried out for CARE International in Vietnam in parallel with this report.<sup>29</sup> Further training of CASI III staff, partner organisations and other stakeholders on gender equality, which draws on this localised research, will ensure that both women and men are able to benefit from project interventions.

### ENSURE THAT AN APPROPRIATE SCALE IS USED TO PLAN INTERVENTIONS, TAKING INTO ACCOUNT ANY OTHER CONTRIBUTING FACTORS INCLUDING ENVIRONMENTAL DEGRADATION

In the project areas visited there was widespread reporting of degradation of forest ecosystems due to illegal logging and over-exploitation either within reach of the villages or upstream. Where possible it is important to address the causes of for example flash flooding rather than simply addressing the symptoms. This requires an appropriate scale to be used when analysing the factors

to be addressed in an intervention to avoid a situation where a problem is possibly pushed further down stream or even exacerbates problems downstream.

### KNOWLEDGE SHARING AND CAPACITY BUILDING AT MULTIPLE LEVELS ARE VITAL IN IMPLEMENTATION OF FUTURE PROJECT INTERVENTIONS

Activities to enhance knowledge sharing and capacity could include:

- Improving sharing of knowledge and models, effectiveness and good practices with government and other stakeholders through workshops, meetings, dialogues
- Workshops at a local level, for example to communicate the importance of indigenous species in afforestation and agriculture, and to share some models of nurseries and plantations that use indigenous species in afforestation
- Document project activities in innovative ways, including through film, pictures, and research reports, and use the opportunity to highlight gender and women's empowerment through adaptation
- Training in gender and sustainable community-based natural resource governance should be provided to the key officials at commune and village level as a first step to addressing gender inequality
- Raise awareness of local people about climate change and potential adaptation responses through appropriate methods and resources
- Explore ways to increase participation of local people in adaptation and DRR planning at relevant levels
- Share experiences and lessons from the CVCA in the CASI III project regionally and globally

### UNDERTAKE TARGETED AND PRACTICAL RESEARCH INTO THE APPLICATION OF THE CBA MODEL ITSELF, AS WELL AS SPECIFIC ACTIVITIES WITHIN THE PROJECT (SUCH AS INDIGENOUS CROPS, CROP SYSTEMS, NON FARM INCOME GENERATION)

Research on the application of CARE's CBA model in relation to traditional medicine, indigenous crops, and agricultural systems would be valuable to the project and beyond. This should include research into the climate resilience of specific varieties. Research on indigenous crops and cultivation systems, which are supported by NGOs, will contribute to understanding at local, provincial as well as national level. This research could be presented at Ministry of Agriculture and Rural

Development (MARD) national conference under MARD's Action Plan for Climate Change.

Applied research into potential non-farm income generation options would also be useful, as many of the ethnic minorities still possess and practice traditional handicrafts such as weaving, or traditional medicine. This research should be linked to market analysis. Due to the limited skills training provided to the ethnic minorities, these non-farm activities will have to be facilitated together with vocational training and work opportunities.

Further research into other areas such as the local potential of biogas and improved cook stoves could also be considered.

### **ADVOCATE TO RELEVANT AGENCIES ON KEY INFRASTRUCTURE NEEDS**

Enhanced service provision and infrastructure investment is a clear need in these villages and the project should work to improve this by facilitating the participation and voice of communities in local government planning. Of priority are improved health centre facilities, road access and the construction or improvement of irrigation systems.

### **FACILITATE VOICE OF ETHNIC MINORITY GROUPS IN PLANNING AND POLICY-MAKING AT ALL LEVELS**

Several examples emerged that demonstrate a disconnect between policies and plans and the specific needs and priorities of ethnic minority groups in the northern mountainous region. Ethnic minority communities must be empowered to have a voice in planning and policy-making at all levels, from local to national and beyond. This could involve strengthening community-based organisations, facilitating dialogue within communities and between communities and government officials and linking northern communities with national-level advocacy organisations. Having a voice in decision-making is an important way that ethnic minority groups can secure their rights and realise their aspirations.

### **PROMOTE CLIMATE-RESILIENT LIVELIHOOD STRATEGIES FOR ETHNIC MINORITY GROUPS AT MULTIPLE LEVELS AND WITH MULTIPLE AGENCIES**

The study demonstrated the challenges that ethnic minority groups in the project area face in sustaining their livelihoods. This already precarious situation will continue to be undermined by the impacts of climate change. However, a number of strategies can be identified that will contribute to increased resilience of vulnerable people in these communities.

Diversification of livelihoods to include off-farm activities, such as honey production, bamboo processing, and traditional handicrafts could provide a source of income to supplement existing strategies and provide a buffer when crops are damaged or destroyed. In order for this to be feasible, the project would need to invest in value chain analysis, training and facilitation of access to markets.

Sustainable livelihood models and capacity building initiatives must be designed to address men and women's roles in livelihood activities, and should aim to shift gender relations as well as improve livelihood outcomes.

### **STRENGTHEN EXISTING LIVELIHOOD STRATEGIES AND ENSURE CLIMATE RESILIENCE**

Strengthening of existing livelihood strategies, for example through implementation of irrigation systems and identification of climate-resilient varieties of rice is another vital approach. There is a range of options available to improve agriculture and land management which could include organic fertiliser production, afforestation using indigenous species and sloping land agricultural land technique.

### **STRENGTHEN DISASTER RISK MANAGEMENT (DRM) STRUCTURES AND CAPACITIES, INCLUDING FOR ADAPTATION PLANNING**

There is a fairly high level of awareness of the need for disaster risk management, even at the local level. While DRM does not encompass all aspects of adaptation, it represents a good entry point for raising awareness of climate change and building capacity for planning appropriate responses. Therefore, strengthening existing DRM structures and capacities would be a positive step towards building capacity for adaptation. These efforts should explicitly integrate climate change, to ensure that DRM plans and actions will be viable in a changing climate.

### **FACILITATE ACCESS TO TIMELY, ACCURATE AND USEFUL CLIMATE INFORMATION**

Localised weather and climate information was not available in the communities included in this study, however mass media, including loudspeakers, radio and TV is widespread and provides a platform for climate information dissemination. It is vital that material be presented in an accessible and understandable format that considers the language and literacy level of all community members. The program could cooperate with the local media providers to build their capacity to deliver more suitable programs to communities.

## Recommendations for other actors

Based on the analysis there are actions that other actors could take to address the vulnerabilities and capacities of ethnic minorities. The following recommendations are intended for other organisations working with ethnic minority communities in the northern region. These recommendations could also contribute to broader advocacy messages within the CASI III project.

### ENSURE THERE HAS BEEN A ROBUST ANALYSIS UNDERTAKEN OF THE CLIMATE AND DISASTER RESILIENCE OF FUTURE INVESTMENTS

Existing and new government programmes should be analysed to identify both potential negative impacts, as well the opportunities to integrate DRR and adaptation into them. This review will help to safeguard government investments in the long term, and ensure that they enhance capacity and reduce the vulnerabilities of the local people. Practical tools and guidance on integrating DRR and adaptation in local development planning is needed along with targeted capacity building for government and other agencies active at this level.

### INVEST IN COMMUNITY BASED DISASTER RISK MANAGEMENT AT LOCAL LEVEL, AS WELL AS EMERGENCY RESPONSE

There are some good efforts underway to develop disaster risk management plans at different levels, and this work will be scaled up in the future through government initiatives. These will only be effective locally if lower levels of government and the communities themselves are engaged in their development and they have the information, capacity and resources to put the plans into action. It is critical that resources are allocated for implementation of disaster risk reduction measures and more particularly for the implementation of the important 'software' elements of CBDRM such as planning, capacity development and information. Having these systems and structures in place and working effectively will be an important step towards adapting to changing disaster risks over time due to climate change.

### MAKE RESOURCES AVAILABLE FOR IMPLEMENTATION OF NATIONAL POLICIES AT LOCAL LEVEL

It is clear from the analysis that even when the will is there, local government officials often lack the resources and capacity to effectively implement policies that are developed at the national level. In order for vulnerable communities, including remote ethnic minority communities, to benefit from policies, they must be implemented at the local level. The management of DRM and adaptation funding should

be decentralised, with improved guidelines and capacity building programmes for local government staff.

### PROMOTE INTEGRATED PLANNING PROCESSES – ACROSS MULTIPLE LEVELS

It is clear from this report that climate change vulnerability of ethnic minorities is complex and cannot be analysed in isolation. Underlying causes of poverty shape the context that determines local vulnerability and capacity to adapt. The unsustainable use of natural resources and restricted access to land and services for example, act as catalysts for climate change impacts. An integrated approach that seeks to address these issues in a combined and participatory planning process would be better able to tackle them. As an example, unsustainable land and forest use up-river affects the availability of clean water and increases the risks of flooding further down-river. Households are not able to address the issue on their own. Instead, an integrated plan is needed that addresses these issues at a landscape level. There are already some good practices on these types of integrated planning processes in Vietnam, and further work could be done to ensure the integration of climate change risks into the process.

### IMPROVE SERVICE PROVISION TO ETHNIC MINORITY COMMUNITIES

The allocation of resources alone is not enough to ensure that ethnic minority communities benefit from policy implementation - as highlighted by evidence of investment in inappropriate infrastructure and training that is not targeted. It is necessary for policy development and implementation to take into account the specific needs and priorities of ethnic minority communities. This includes ensuring that climate information for example is disseminated in a way that is appropriate and accessible for all, including ethnic minority groups and women in particular. Programmes to build the awareness and capacity of local communities, especially the most vulnerable groups (ethnic minorities, children, disabled, elderly, women) to engage in disaster risk management and climate change adaptation activities are an important part of a response to climate change for these communities.



# Endnotes

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- 27 In this case, further information is needed to understand the true causes, which could include the quality of the technical training, lack of available resources to apply new technology or habitual practices.
- 28 For example, the younger generations of ethnic minorities tend to no longer use traditional fabric.
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